George Louis Leclerc Buffon (1707–1788) was the first of the great pioneers of modern evolution doctrine. Reversing Cuvier's change of opinion, he passed from an early belief in the fixity of species to an extreme theory of their mutability (1761–1766), from which he afterwards in some measure reacted. Although frequently quite explicit as to the general idea of evolution, he continually recoiled from his own conclusions, and contradicted himself to avoid contradicting the Scriptures. But it is hard to tell whether this was an expression of ironical humour, or an attempt to temporize between science and orthodoxy, or due to a perception of the difficulty of the problem. His conception of descent was imperfect in so far as he adhered to the linear series expounded by Bonnet, nor did he combine his various ætiological suggestions into a consistent theory; but he is entitled to a very high place in the history, since he asked many new questions if he did not answer them, and because of his anticipation of many important ideas, such as pangenesis, the struggle for existence, artificial and natural selection, and geographical isolation. His most significant contribution to ætiology was his theory that the direct action of the environment produced structural changes which were conserved by heredity.

Pioneers of Modern Evolution Doctrine.

Erasmus Darwin (1731–1802), grandfather of Charles Darwin, expounded in prose and verse a theory of the gradual and natural development of organisms from spontaneously generated primordial forms of great simplicity, endowed with an irritability and excitability which made evolution possible. He extended the conception of the struggle for existence to plants as well as animals, but does not seem to have perceived the vital connection between struggle and progress. Although much influenced by Buffon, he held a different causal theory, emphasizing not the direct influence of the environment, but its indirect effect in evoking functional reactions, which in turn produced modifications. "All animals", he says, "undergo transformations which are in part produced by their own exertions, in response to